



(12) **United States Patent**
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(54) **VEIN FILTER**

USPC 606/200
See application file for complete search history.

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(56) **References Cited**

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(57) **ABSTRACT**

A vessel filter comprising a first region and a second region wherein the filter is movable between a collapsed position for delivery to the vessel and an expanded position for placement within the vessel. A first region has a filter portion having a converging region to direct particles toward the center of the filter and having a plurality of spaced apart elongated struts and, a plurality of connecting struts extending at an angle from the elongated struts to form closed geometric shapes. The second region is flared in the expanded position to have a transverse dimension increasing toward a second end portion opposite the first end portion. The second region includes vessel engaging hooks at the second end portion. The first region has a plurality of closed looped spacer struts extending radially with respect to a longitudinal axis of the filter when the filter is in the expanded position.

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(52) **U.S. Cl.**

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(58) **Field of Classification Search**

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11 Claims, 4 Drawing Sheets

